

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-31. (Canceled)

32. (Currently amended) A method of cleaning a substrate wafer comprising:

- spinning a substrate wafer having a frontside and a backside;
- exposing said frontside of said spinning substrate wafer to an etchant or cleaning chemical chemicals; and
- after exposing said substrate wafer to said etchant or cleaning chemical, rinsing said frontside of said substrate to remove said etchant or cleaning chemical from said frontside of said substrate, wherein said rinsing comprises:
 - applying a liquid having a lower surface tension than water to said frontside of said spinning substrate wafer; and
 - after applying the liquid having a lower surface tension than water, dispensing a liquid DeIonized (DI) water through a nozzle and applying the liquid DI water to said frontside of said substrate wafer,
 - wherein the liquid having a lower surface tension than water is applied to the frontside of the substrate wafer separately from and not simultaneously with or while the liquid DI water and etchant or cleaning chemical [[is]] are applied to the frontside of the substrate wafer.

33. (Canceled)

34. (Currently amended) The method of claim 32 further comprising applying megasonics energy to said backside of said substrate wafer while exposing said frontside of said substrate wafer to said etchant or cleaning chemical ~~cleaning chemicals or etchants~~.

35. (Canceled)

36. (Currently amended) The method of claim 32 further comprising applying megasonics energy to said backside of said substrate wafer while applying said liquid DI water to said frontside of said substrate wafer.

37. (Currently amended) A method of rinsing chemicals or etchants from a substrate wafer comprising:

~~spinning rotating~~ a substrate wafer having a frontside and a backside;
dispensing an etchant or cleaning chemical ~~cleaning chemicals or etchants~~ onto said frontside of said substrate wafer to form an etchant or cleaning chemical covered substrate wafer; and

~~immediately~~ after dispensing said etchant or cleaning chemical ~~cleaning chemicals or etchants onto said rotating wafer~~, rinsing said frontside of said substrate to remove said etchant or cleaning chemical from said frontside of said substrate, wherein said rinsing comprises:

immediately after dispensing said etchant or cleaning chemical onto said spinning substrate, applying a vapor produced from a liquid having a lower surface tension than water onto said ~~cleaning chemical or etchant covered~~ frontside of said spinning substrate wafer; and

immediately after applying said vapor produced from a liquid having a lower surface tension than water, dispensing a liquid DeIonized (DI) rinse water through a nozzle and applying the liquid DI rinse water onto said frontside of said spinning substrate wafer,

wherein the vapor produced from a liquid having a lower surface tension than water is applied onto the frontside of the substrate wafer separately from and not simultaneously with or while the liquid DI rinse water and etchant or cleaning chemical ~~[[is]]~~ are applied onto the frontside of the substrate wafer.

38. (Currently amended) The method of claim 37 further comprising heating said liquid DI rinse water prior to applying said liquid DI rinse water onto said frontside of said substrate wafer.

39. (Previously presented) The method of claim 38 wherein said liquid DI rinse water is heated to a temperature between 60-70°C.

40. (Currently amended) The method of claim 37 further comprising applying megasonics energy to said backside of said substrate wafer while applying said liquid DI rinse water onto said frontside of said substrate wafer.

41. (Currently amended) The method of claim 37 further comprising stopping said applying of said liquid DI rinse water and spinning said substrate wafer dry.

42. (Currently amended) A method of cleaning or etching a substrate wafer comprising:

placing a substrate wafer having a frontside and a backside on a support over a plate having a plurality of transducers formed thereon, wherein said substrate wafer is horizontally supported and separated by a gap from said plate;

flowing a backside liquid in said gap between said backside of said substrate wafer and said support;

dispensing a chemical or etchant ~~chemicals or etchants~~ onto said frontside of said substrate wafer to form a chemical or etchant covered substrate wafer while flowing said liquid in said gap; and

after dispensing said chemical or etchant ~~chemicals or said etchants~~, rinsing said frontside of said substrate to remove said chemical or etchant from said frontside of said substrate, wherein said rinsing comprises:

dispensing a liquid having a lower surface tension than water or a vapor produced from a liquid having a lower surface tension than water onto said chemical or etchant covered frontside of said spinning substrate wafer;

after dispensing said vapor or liquid, dispensing liquid DeIonized (DI) rinse water through a nozzle and onto said frontside of said spinning substrate wafer,

wherein the liquid having a lower surface tension than water or the vapor produced from the liquid having a lower surface tension than water is dispensed onto the frontside of the substrate wafer separately from and not simultaneously with or while the liquid DI rinse water ~~liquid DI water and chemical or etchant~~ [[is]] are dispensed onto the frontside of the substrate wafer;

applying megasonics energy to said backside of said substrate wafer from said transducer while dispensing said liquid DI rinse water onto said frontside of said substrate wafer; and

after dispensing said liquid DI rinse water onto said frontside of said substrate wafer, blowing a fluid at the center of the frontside of said substrate wafer while said substrate wafer is spinning with sufficient force to remove a liquid DI rinse water bulge formed at the center of the substrate wafer.

43. (Currently amended) The method of claim 42 further comprising applying megasonics energy to said backside of said substrate wafer from said transducers while said dispensing of said chemical or said etchant.

44. (Currently amended) The method of claim 42 further comprising heating said liquid DI rinse water prior to dispensing said liquid DI rinse water onto said frontside of said substrate wafer.

45. (Currently amended) The method of claim 44 wherein said liquid DI rinse water is heated to a temperature between 60-70°C.

46. (Canceled)

47. (Currently amended) The method of claim 32, further comprising after applying the liquid DI water to said frontside of said spinning substrate wafer, blowing a fluid at the center of the frontside of said substrate wafer while said substrate wafer is spinning to remove a DI water bulge formed at the center of the substrate wafer.

48. (Currently amended) The method of claim 37, further comprising after applying the liquid DI rinse water onto said frontside of said spinning substrate wafer, blowing a gas at the center of the frontside of said substrate wafer while said substrate wafer is spinning with sufficient force to remove a DI water bulge formed at the center of the substrate wafer.

49. (Currently amended) The method of claim 36, further comprising after applying the liquid DI water to said frontside of said spinning substrate wafer, blowing a gas at the center of the frontside of said substrate wafer while said substrate wafer is spinning with sufficient flow to remove a DI water bulge formed at the center of the substrate wafer.

50. (Canceled)

51. (Previously presented) The method of claim 32, wherein the liquid having a lower surface tension than water comprises isopropyl alcohol (IPA).

52. (Previously presented) The method of claim 37, wherein the vapor produced from a liquid having a lower surface tension than water comprises isopropyl alcohol (IPA).

53. (Previously presented) The method of claim 42, wherein the liquid having a lower surface tension than water comprises isopropyl alcohol (IPA); and wherein the vapor produced from a liquid having a lower surface tension than water comprises isopropyl alcohol (IPA).

54. (Currently amended) The method of claim 42, wherein the fluid, which is blown onto the center of the substrate wafer to remove a liquid DI rinse water bulge formed at the center of the substrate wafer comprises liquid isopropyl alcohol (IPA).

55. (Currently amended) The method of claim 42, wherein the fluid, which is blown onto the center of the substrate wafer to remove a liquid DI rinse water bulge formed at the center of the substrate wafer comprises a gas selected from the group consisting of isopropyl alcohol (IPA) vapor, nitrogen gas, helium gas, argon gas, and any combination thereof.